magnetoresistive (MR) sensor element at a location opposite the air bearing surface (ABS) of the soft adjacent layer (SAL) magnetoresistive (MR) sensor element.

18. A magnetic read-write head having formed therein a soft adjacent layer (SAL) magnetoresistive (MR) sensor element in accord with claim 10.

19. The magnetic read-write head of claim 18 wherein the soft adjacent layer (SAL) magnetoresistive (MR) sensor element is formed centered within a write track width of the magnetic read-write head and formed centered within a read gap thickness of the magnetic read-write head.

20. A magnetic data storage enclosure having fabricated therein a magnetic read-write head in accord with claim 18.

21. A method for fabricating a magnetoresistive (MR) sensor element comprising:

providing a substrate;

forming over the substrate a dielectric layer, the dielectric layer having a first surface of the dielectric layer and a second surface of the dielectric layer opposite the first surface of the dielectric layer;

forming over the substrate a magnetoresistive (MR) layer contacting the first surface of the dielectric layer;

forming over the substrate a soft adjacent layer (SAL), the soft adjacent layer (SAL) having a first surface of the soft adjacent layer (SAL) and a second surface of the soft adjacent layer (SAL) opposite the first surface of the soft adjacent layer (SAL), the first surface of the soft adjacent layer (SAL) contacting the second surface of the dielectric layer; and

forming over the substrate a transverse magnetic biasing layer, the transverse magnetic biasing layer contacting the second surface of the soft adjacent layer (SAL), where at least one of the dielectric layer, the magnetoresistive (MR) layer, the soft adjacent layer (SAL) and the transverse magnetic biasing layer is a patterned layer formed employing an etch mask which serves as a lift-off stencil for forming a patterned second dielectric layer adjoining an edge of the patterned layer.

2 22. The method of claim 21 wherein the magnetoresistive (MR) layer is formed interposed between the soft adjacent layer (SAL) and the substrate.

3 23. The method of claim 21 wherein the soft adjacent layer (SAL) is formed interposed between the magnetoresistive (MR) layer and the substrate.

4 24. The method of claim 21 wherein the soft adjacent layer (SAL) is formed from a soft magnetic material selected from the group consisting of nickel-iron alloys, higher order alloys incorporating nickel-iron alloys and cobalt-zirconium amorphous alloys.

5 25. The method of claim 21 wherein the transverse magnetic biasing layer is formed from a hard magnetic material selected from:

the group of antiferromagnetic materials consisting of iron-manganese alloys, nickel-manganese alloys, nickel oxide, nickel-cobalt oxide; and

the group of permanent magnet materials consisting of cobalt-platinum alloys and cobalt-chromium-platinum alloys.

6 26. The method of claim 21 wherein the transverse magnetic biasing layer induces within the soft

adjacent layer (SAL) a transverse magnetic field perpendicular to a longitudinal easy axis magnetic field induced within the magnetoresistive (MR) layer.

27. The method of claim 21 wherein:

a ratio of a magnetic moment of the soft adjacent layer (SAL) to a magnetic moment of the magnetoresistive (MR) layer is from about 0.5 to about 1.0; and

a thickness of the dielectric layer is from about 50 to about 500 angstroms.

28. The method of claim 21 wherein the dielectric layer, the magnetoresistive (MR) layer, the soft adjacent layer (SAL) and the transverse magnetic biasing layer are coextensive within a trackwidth of the soft adjacent layer (SAL) magnetoresistive (MR) sensor element at a location opposite the air bearing surface (ABS) of the soft adjacent layer (SAL) magnetoresistive (MR) sensor element.

29. A magnetic read-write head having formed therein a soft adjacent layer (SAL) magnetoresistive (MR) sensor element formed in accord with the method of claim 21.

30. The magnetic read-write head of claim 29 wherein the soft adjacent layer (SAL) magnetoresistive (MR) sensor element is formed centered within a write track width of the magnetic read-write head and formed centered within a read gap thickness of the magnetic read-write head.

31. A magnetic data storage enclosure having fabricated therein a magnetic read-write head in accord with claim 29.

1. A soft adjacent layer (SAL) magnetoresistive (MR) sensor element comprising:

a substrate;

a dielectric layer formed over the substrate, the dielectric layer having a first surface of the dielectric layer and a second surface of the dielectric layer opposite the first surface of the dielectric layer;

a magnetoresistive (MR) layer formed over the substrate, the magnetoresistive (MR) layer contacting the first surface of the dielectric layer;

a soft adjacent layer (SAL) formed over the substrate, the soft adjacent layer (SAL) having a first surface of the soft adjacent layer (SAL) and a second surface of the soft adjacent layer (SAL) opposite the first surface of the soft adjacent layer (SAL), the first surface of the soft adjacent layer (SAL) contacting the second surface of the dielectric layer; and

a transverse magnetic biasing layer formed over the substrate, the transverse magnetic biasing layer contacting the second surface of the soft adjacent layer (SAL), where the magnetoresistive (MR) layer is formed interposed between the substrate and the soft adjacent layer (SAL).

2. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 1 wherein the soft adjacent layer (SAL) is formed from a soft magnetic material selected from the group consisting of nickel-iron alloys, higher order alloys incorporating nickel-iron alloys and cobalt-zirconium amorphous alloys.

3. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 1 wherein the transverse magnetic biasing layer is formed from a hard magnetic material selected from:

the group of antiferromagnetic magnetic materials consisting of iron-manganese alloys, nickel-manganese alloys, nickel oxide and nickel-cobalt oxide; and

the group of hard bias permanent magnet materials consisting of cobalt-platinum alloys and cobalt-chromium-platinum alloys.

4. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 1 wherein the transverse magnetic biasing layer induces within the soft adjacent layer (SAL) a transverse magnetic field perpendicular to a longitudinal easy axis magnetic field induced within the magnetoresistive (MR) layer.

5. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 1 wherein:

a ratio of a magnetic moment of the soft adjacent layer (SAL) to a magnetic moment of the magnetoresistive (MR) layer is from about 0.5 to about 1.0; and

a thickness of the dielectric layer is from about 50 to about 500 angstroms.

6. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 1 wherein the dielectric layer, the magnetoresistive (MR) layer, the soft adjacent layer (SAL) and the transverse magnetic biasing layer are coextensive within a trackwidth of the soft adjacent layer (SAL) magnetoresistive (MR) sensor element at a location opposite the air bearing surface (ABS) of the soft adjacent layer (SAL) magnetoresistive (MR) sensor element.

7. A magnetic read-write head having formed therein a soft adjacent layer (SAL) magnetoresistive (MR) sensor element in accord with claim 1.

8. The magnetic read-write head of claim 7 wherein the soft adjacent layer (SAL) magnetoresistive (MR) sensor element is formed centered within a write track width of the magnetic read-write head and formed centered within a read gap thickness of the magnetic read-

write head.

9. A magnetic data storage enclosure having fabricated therein a magnetic read-write head in accord with claim 7.

10. A soft adjacent layer (SAL) magnetoresistive (MR) sensor element comprising:

a substrate;

a dielectric layer formed over the substrate, the dielectric layer having a first surface of the dielectric layer and a second surface of the dielectric layer opposite the first surface of the dielectric layer;

a magnetoresistive (MR) layer formed over the substrate, the magnetoresistive (MR) layer contacting the first surface of the dielectric layer;

a soft adjacent layer (SAL) formed over the substrate, the soft adjacent layer (SAL) having a first surface of the soft adjacent layer (SAL) and a second surface of the soft adjacent layer (SAL) opposite the first surface of the soft adjacent layer (SAL), the first surface of the soft adjacent layer (SAL) contacting the second surface of the dielectric layer; and

a transverse magnetic biasing layer formed over the substrate, the transverse magnetic biasing layer contacting the second surface of the soft adjacent layer (SAL), where the transverse magnetic biasing layer is formed from a hard bias permanent magnet material.

11. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 10 wherein the magnetoresistive (MR) layer is formed interposed between the soft adjacent layer (SAL) and the substrate.

12. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 10 wherein the

soft adjacent layer (SAL) is formed interposed between the magnetoresistive (MR) layer and the substrate.

13. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 10 wherein the soft adjacent layer (SAL) is formed from a soft magnetic material selected from the group consisting of nickel-iron alloys, higher order alloys incorporating nickel-iron alloys and cobalt-zirconium amorphous alloys.

14. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 10 wherein the hard bias permanent magnet material is selected from the group consisting of cobalt-platinum alloys and cobalt-chromium-platinum alloys.

15. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 10 wherein the transverse magnetic biasing layer induces within the soft adjacent layer (SAL) a transverse magnetic field perpendicular to a longitudinal easy axis magnetic field induced within the magnetoresistive (MR) layer.

16. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 10 wherein:

a ratio of a magnetic moment of the soft adjacent layer (SAL) to a magnetic moment of the magnetoresistive (MR) layer is from about 0.5 to about 1.0; and

a thickness of the dielectric layer is from about 50 to about 500 angstroms.

17. The soft adjacent layer (SAL) magnetoresistive (MR) sensor element of claim 10 wherein the dielectric layer, the magnetoresistive (MR) layer, the soft adjacent layer (SAL) and the transverse magnetic biasing layer are coextensive within a trackwidth of the soft adjacent layer (SAL)